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EPA Issues New Source Review Rule for Fine Particulate Matter

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Special to the Legal

Industrial facilities in the Philadelphia area have long been acquainted with the air permitting requirements that result from the region's classification as "nonattainment" for purposes of the National Ambient Air Quality Standards, or NAAQS, for ground level ozone. These requirements, imposed through the New Source Review permitting program, result in stringent controls and limits on emissions of nitrogen oxides, or NO_x, and volatile organic compounds, or VOC, for major sources. In May, the Environmental Protection Agency finalized a new regulation addressing New Source Review requirements for a separate air contaminant: fine particulate matter, or PM_{2.5}. The EPA's new rule became effective July 15. Consequently, local sources with PM_{2.5} emissions above certain thresholds must now satisfy New Source Review requirements for PM_{2.5}, in addition to applicable requirements for other pollutants.

Generally speaking, particle pollution, or particulate matter, is a mixture of microscopic solids and liquid droplets suspended in the air. Particulate matter is produced through all types of combustion activities and certain industrial processes. According to the EPA, exposure to particulate matter can cause a host of serious health problems, including heart and lung diseases, decreased lung function, asthma attacks and even premature death. Seniors, children and people with heart and lung diseases are particularly sensitive to particulate matter exposure.

Particulate matter is classified — and



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regulated — based on the size of the particles. Specifically, there are two types of small particulate matter: fine particles, or PM_{2.5}, which have a diameter of 2.5 micrometers or less (less than one-seventh the average width of a human hair); and coarse particles, or PM₁₀, which have a diameter of between 2.5 and 10 micrometers. PM_{2.5} can be emitted directly into the atmosphere (from fire activities or gasoline engines, for example) or formed in the air through chemical reactions involving "precursor" pollutants, including sulfur dioxide and NO_x. Fine particles are believed to pose the greatest health risks, because they are small enough to lodge deeply in the lungs.

In 1997, the EPA promulgated the NAAQS for PM_{2.5}, which consists of two parts: a 24-hour standard of 65 micrograms per cubic meter (µg/m³) and an annual standard of 15 µg/m³. Using these standards, the EPA designated various areas of the country as being in either nonattainment, attainment or unclassifiable, with the PM_{2.5} NAAQS. These designations were published in December 2004 and became effective in April 2005. In our region, Bucks, Chester, Delaware, Montgomery, Philadelphia, Camden, Burlington and Gloucester counties, among

others in Pennsylvania and New Jersey, are designated as nonattainment.

After the EPA established the PM_{2.5} NAAQS, several industry groups and state governments challenged the new standards. As a result of the litigation, it took the EPA a number of years to develop the implementing regulations for the PM_{2.5} NAAQS. Notably, in March 2007, the EPA finalized the requirements for states to follow in developing State Implementation Plans to demonstrate attainment with the PM_{2.5} NAAQS. Most recently, on May 16, the EPA identified the final key component in the implementation framework for the PM_{2.5} NAAQS: the New Source Review requirements for PM_{2.5}. EPA's new rule is entitled "Implementation of the New Source Review Program for Particulate Matter Less Than 2.5 Micrometers (PM_{2.5})," 73 Fed. Reg. 28321 (the PM_{2.5} NSR Rule). The PM_{2.5} New Source Review Rule became effective July 15.

As a general matter, the New Source Review is a permitting program that applies when a source is constructed or modified. It is composed of three separate programs: nonattainment New Source Review; prevention of significant deterioration; and minor New Source Review. The nonattainment New Source Review program requires that new major sources, or modifications of existing major sources causing a significant increase in a nonattainment pollutant, must achieve the Lowest Achievable Emission Rate (LAER) and obtain emission credits at a prescribed ratio to offset the newly proposed emissions.

By contrast, the prevention of significant

deterioration program applies when major sources located in attainment or unclassifiable areas are constructed or undergo major modifications, and requires sources to install Best Available Control Technology and conduct air quality monitoring and modeling analyses. Finally, the minor New Source Review program addresses both major and minor sources that undertake non-major construction or modification activities, regardless of whether an area is designated nonattainment or attainment/unclassifiable. Because the Philadelphia region is in nonattainment with the PM2.5 NAAQS, nonattainment New Source Review will be the relevant permitting program for major sources in this area.

As written, there is a considerable amount of uncertainty related to how permitting agencies will implement the PM2.5 New Source Review Rule. Nevertheless, as of July 15, states are required under the federal rule to apply the New Source Review program to new or modified major sources of PM2.5. States that have an existing approved New Source Review program, like Pennsylvania, must revise it to ensure that the federal requirements are met. In the meantime, they will apply a transitional New Source Review program under the EPA's "Appendix S" (entitled "Emission Offset Interpretative Ruling"). Pennsylvania does not yet have a revised state implementation plan reflecting the New Source Review requirements; therefore, sources in this area are currently subject to the requirements in Appendix S.

Importantly, for purposes of nonattainment New Source Review, PM10 may no longer be used as a surrogate for regulating PM2.5 in nonattainment areas (as set forth in an earlier EPA policy document). Accordingly, because many facilities had previously only quantified PM10 emissions, they may need to quantify their PM2.5 emissions in order to address permitting issues. Recognizing that some aspects of such quantification may be difficult as a technical matter, the EPA has stated in the new rule that states are not required to address condensable particulate matter in evaluating New Source Review applicability until January 2011. Additionally,

there are a number of other aspects of the EPA's new rule that are either unclear or could have meaningful and immediate implications for local industry, as described herein.

The PM2.5 New Source Review Rule addresses both direct PM2.5 emissions and emissions of the PM2.5 precursors: SO2, NOx, VOC and ammonia. SO2, NOx and VOC are already regulated under other NAAQS. Nevertheless, states are also required to regulate SO2 emissions to satisfy New Source Review for PM2.5. In addition, states are required to regulate NOx, unless they, or the EPA, can demonstrate that NOx emissions do not contribute significantly to ambient PM2.5 concentrations. Conversely, states are not required to regulate VOC or ammonia, unless they, or the EPA, demonstrate that such pollutants are significant contributors to PM2.5 pollution.

Under the PM2.5 New Source Review Rule, a source will be characterized as "major" for New Source Review purposes, if it has the potential to emit 100 tons per year of PM2.5. The PM2.5 New Source Review Rule does not expressly address whether a source that exceeds the major source threshold for a precursor pollutant would also be considered a major source of direct PM2.5 emissions. Although the EPA specifically addressed this issue in the context of promulgating the implementing regulations for the ozone NAAQS, the PM2.5 New Source Review Rule is silent on this question. Nonetheless, the EPA is expected to treat sources that are major for a PM2.5 precursor as being major for PM2.5; in that case, sources with precursor emissions in excess of 100 tons per year will be major, and will be required to evaluate New Source Review requirements for that pollutant under the New Source Review program.

For modifications to existing major sources, the PM2.5 New Source Review Rule establishes a significant net emission increase threshold of 10 tons per year for PM2.5 and 40 tons per year for SO2, NOx and VOC. In other words, if a modification to an existing major source of PM2.5 would cause a 10-ton increase in PM2.5 emissions, New Source Review requirements would

be triggered. Because the determination of whether there is a significant net emission increase is based on netting emissions over a five-year period (according to Appendix S), even sources that are undergoing modifications that result in relatively insubstantial increases in PM2.5 emissions may easily exceed the stringent 10-tons-per-year threshold for PM2.5, thereby triggering New Source Review.

A new or existing source subject to nonattainment New Source Review is required to obtain emission offsets to account for any resulting increases in PM2.5 emissions. Increases in PM2.5 emissions can be offset with reductions in direct PM2.5 emissions. The PM2.5 New Source Review Rule also allows for reductions in precursor emissions to offset direct PM2.5 emissions increases, and vice versa, as well as reductions of one precursor to offset emissions increases of another precursor. While SO2 and NOx offsets are readily available and can be traded or purchased on the market, PM2.5 offsets may not be readily available. Furthermore, although sources may be able to offset PM2.5 emissions increases with reductions in precursor emissions (depending on the rules of the permitting authority), the minimum offset ratios prescribed by the PM2.5 New Source Review Rule are very stringent — i.e., 200 tons of NOx, or 40 tons of SO2, to offset a single ton of direct PM2.5 emissions.

Finally, if a major source triggers nonattainment New Source Review, it must achieve LAER for the relevant pollutant. Although control strategies and emission rates are fairly well defined for SO2 and NOx, LAER has not been defined for PM2.5. As a result, it is still unclear what level of emissions control sources will have to employ to satisfy New Source Review for PM2.5.

The EPA's new PM2.5 New Source Review Rule is already in effect. Sources with substantial emissions of PM2.5 and/or PM2.5 precursors, including those in the Philadelphia area, should therefore be aware of the array of potential implications of the new New Source Review requirements, as well as the continuing uncertainty regarding certain aspects of the new rule. •